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SOURCE Meditinskiy Rabotnik, Vol XIV, No 32 (948), 1951, p 3.THE ANTIBIOTIC EKMOLIN

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 Corr Mem, Acad Med Sci USSR

For some time, considerable attention has been paid in the USSR to anti-  
 biotics of animal origin, particularly in connection with Filatov's work on  
 tissue therapy. In 1944, Konnikova, Urazova, and Azarkh isolated from rabbit  
 livers and human placenta a bacteriostatic substance which is chemically a  
 protein. In 1945-46, Zil'ber and Yakobson isolated from the erythrocytes of  
 various animals the antibiotic erythrin. At the same time, it was also shown  
 that cultivation of bacteria in media which contain tissue extracts may be  
 used as a method of bringing about modification of bacteria in a definite di-  
 rection. This is of importance for the preparation of living vaccines.

At the Institute of Penicillin and Other Antibiotics, we isolated from  
 various organs (liver, thyroid gland, the spleen, heart muscles) protein-free  
 extracts which have an antibacterial action against tuberculosis bacilli,  
 bacilli coli, and other bacteria and, in addition, stimulate the organism of  
 animals and humans. Ekmolin, an antibiotic isolated from fish in the course of  
 work done at the institute, was found to be active against the following bac-  
 teria: C. diphtheriae, typhoid, staphylococci, streptococci, S. cholera  
 asiatica, and B. coli. It was established in animal experiments that ekmolin  
 is also active against the influenza virus.

A pharmacological investigation demonstrated that ekmolin is nontoxic and  
 does not produce hemolysis. When injected intravenously, it does not affect  
 the blood pressure, although intramuscular administration brings about a slight  
 drop of blood pressure which does not last for longer than an hour. This effect  
 is due to the vasodilatory properties of the preparation, which reach a maxi-  
 mum at the concentration of 1:1,000,000, while a vasoconstrictive effect is ob-  
 served at the concentration of 1:25,000. Ekmolin was also found to exert an  
 antihistaminic effect.

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After ten passages of typhoid together with ekmolin in vitro, no increase of the resistance of the culture was observed. An analogous result was obtained with a dysentery culture.

Ekmolin reinforces the action of penicillin. This was shown with reference to dysentery bacilli, Streptococcus viridans, B. coli, and blue pus [?] bacilli. It also reinforces in vitro the action of streptomycin against B. coli, tuberculosis bacilli, and dysentery bacilli, at the same time delaying the formation of resistant modifications. Together with Sherman and Ravich, we carried out clinical tests on the treatment of bacillary dysentery in children younger than one year with a combination of ekmolin and streptomycin, and found that the treatment was successful. Physician Rykova applied ekmolin in persistent cases of adult bacillus-carriers. The antibiotic was found to aid in suppressing the elimination of Flexner's bacilli after it had been administered in the form of an enema, but the dosage required for that was rather high (0.5 g).

The most interesting results were obtained in work done by Ryzhkov and Tovar-nitskiy (the latter demonstrated that influenza virus forms complex compounds with globin, cytochrome, and clupeine). Together with Prof A. K. Shubladze, we investigated the action in vitro exerted on various influenza strains by the following antibiotics: ekmolin and its salt, protein-free preparations from the liver, thyroid gland, heart muscles, and spleen, lysozyme, penicillin, novocain salt of penicillin, streptomycin, aureomycin, and an antibiotic isolated by us from the tea fungus. The majority of the 15 antibiotics tested in this manner had an activating effect on the influenza virus, as could be shown by intranasal injection of the virus-antibiotic mixture into mice. Negative results were obtained with penicillin and streptomycin. In intramuscular administration, a positive effect was obtained only with ekmolin and in part with anstyptin, although the latter did not exert a prophylactic or therapeutic action on intranasal application in experiments with mice. Only ekmolin was effective both intramuscularly and intranasally. Influenza in mice could be successfully treated and prevented with it.

These experiments led to the successful application of ekmolin in the treatment and prophylaxis of human influenza. It was also found to be effective in scarlet fever. For the prophylaxis of virus or epidemic influenza, ekmolin is administered in the form of nasal drops or inhaled as an aerosol. In the treatment of difficult cases of influenza, ekmolin is administered both in the form of nasal drops and intramuscularly. In cases of epidemic influenza showing complications, ekmolin should be combined with penicillin for both general and local application.

Ekmolin administered with penicillin insures longer retention of the latter in the organism. Thus, the therapeutic effect of the injection of penicillin with ekmolin and novocain twice per day? is no lower than the effect obtained by administering penicillin alone every 3 hours. Tablets of penicillin and ekmolin, when swallowed, establish in the blood a therapeutic concentration of penicillin which persists for 6 hours, as compared with 3-4 hours after administration of penicillin alone.

The Pharmacological Committee of the Ministry of Public Health USSR has authorized the release of ekmolin, and the Scientific Medical Council of the Ministry of Public Health USSR has admitted it for use in the prophylaxis and treatment of influenza and for extending the action of penicillin.

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